

MONTANA

BUSINESS QUARTERLY

WHAT HAPPENED TO MONTANA'S FORESTRY JOBS?

TIMBER HARVESTS CAUSE DECLINING
EMPLOYMENT AND INCOMES

WINTER 2018

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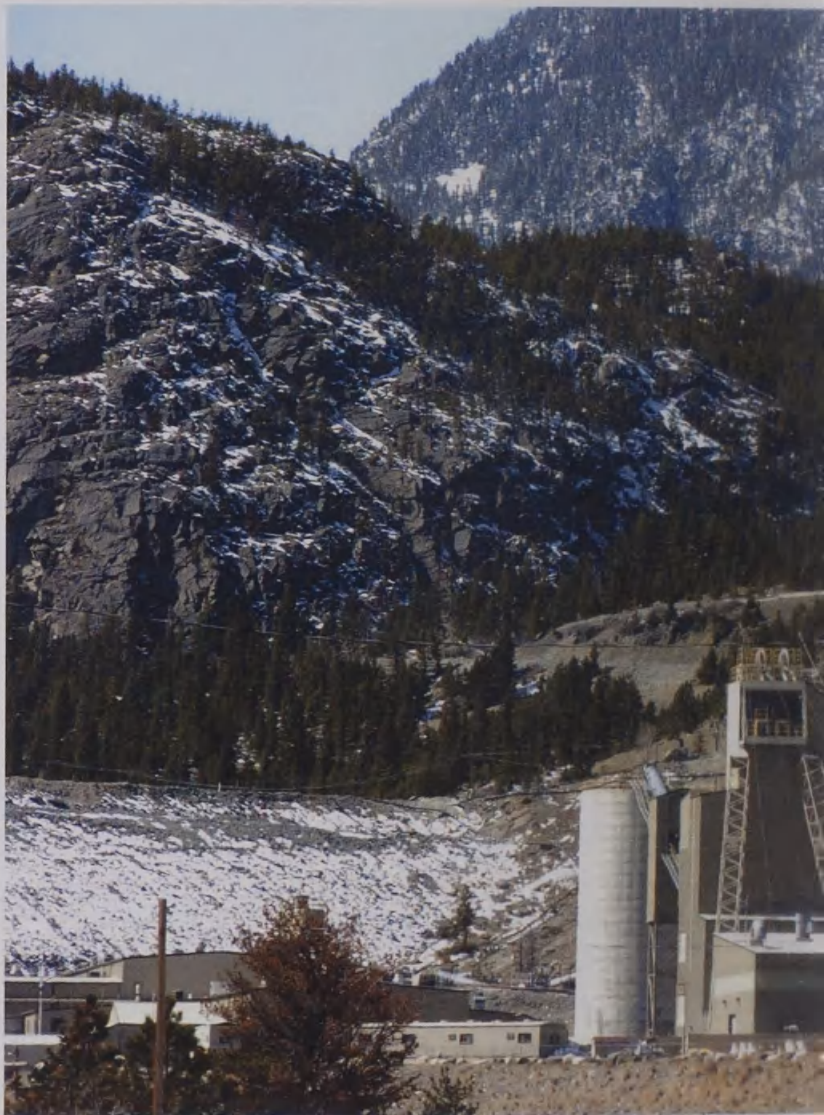
OFFICES
Montana Business Quarterly
Bureau of Business and Economic Research
Gallagher Business Building, Suite 231
32 Campus Drive
University of Montana
Missoula, Montana 59812

PHONE
(406) 243-5113

WEBSITE
www.montanabusinessquarterly.com

EMAIL
info@montanabusinessquarterly.com

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**BUREAU OF BUSINESS AND
ECONOMIC RESEARCH**
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The Bureau of Business and Economic Research has been providing information about Montana's state and local economies for 70 years. Housed on the Missoula campus of the University of Montana, the bureau is the research and public service branch of the College of Business. On an ongoing basis the bureau analyzes local, state and national economies; provides annual income, employment and population forecasts; conducts extensive research on forest products, manufacturing, health care and Montana KIDS COUNT; designs and conducts comprehensive survey research at its on-site call center; presents annual economic outlook seminars in cities throughout Montana; and publishes the award-winning Montana Business Quarterly.

COVER

A close-up of hands resting on an old rusty ax with a dirty wooden handle.
(Shutterstock)

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MESSAGE FROM THE DEAN OF THE COLLEGE OF BUSINESS

It is my pleasure to welcome you to the winter 2018 issue of the Montana Business Quarterly. I am also pleased to have the opportunity to provide you with an update from the Gallagher Business Building.

You may be aware that 2018 marked the centennial of the College of Business, and this past fall, we celebrated with a weekend-long alumni event. Because there is so much to celebrate, we will continue to recognize this milestone all year. It's humbling to think that for over a century, we have helped prepare more than 20,000 alumni here in Missoula to do work that has bolstered local economies throughout Montana.

Over the years, our college has built a thorough, well-rounded educational experience featuring global educational opportunities, internships, hands-on and project-based classroom learning, and applied techniques taught by expert instructors. We're the top-ranked business school in Montana and No. 1 in the entire Big Sky Conference, which spans eight states, according to U.S. News and World Report.

While our centennial year was about honoring our past, it's also about recognizing the bright future for our students as we continue to prepare them to be leaders. Our MBA – the only MBA program in Montana – has grown by 30 percent in the past couple years. All of our programs are enhanced by strong relationships with alumni and networks with professional companies around the world. Did you know that each year about 100 professionals working for all kinds of companies pass through our building to impart wisdom to our students? We are grateful for and proud of these connections.

I invite you to learn more about the challenges and opportunities related to business in our state in this latest issue of the Montana Business Quarterly. I hope you enjoy the valuable insights in these pages, which cover timely and critical topics ranging from employment declines in the wood products industry to benchmarking entrepreneurship in Montana. Between issues, please check out www.business.umt.edu and www.bber.umt.edu and follow @UmontanaBiz and @MontanaBBER on social media to stay connected with us.

Thank you for reading. Go Griz!

Christopher Shook
Sprunk & Burnham Endowed Dean
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THE RISE OF SHORT-TERM RENTALS

An Opportunity and Challenge for Montana Residents

BY NORMA P. NICKERSON AND RHONDA FITZGERALD

In a recent study conducted in Gardiner, Montana, by the Institute for Tourism and Recreation Research at the University of Montana, unsolicited comments from nearly 50 percent of residents exemplified issues in Montana's affordable housing crisis. Those comments ranged from complaints about high rent to unreasonable housing prices. And while the state battles an affordable housing issue, it's also seen a surge in short-term rentals.

Short-term rentals, or vacation rentals, are defined as the rental of a home or a room in a home for less than 30 days. Many rentals are on a weekly basis, while some are a few days. Short-term rentals are currently flooding communities like Whitefish, Bozeman, West Yellowstone, Kalispell and Missoula. But smaller communities are seeing it too. Airbnb reported that in 2017, listings in rural locations accounted for 3.3 million guest arrivals in the United States, a 138 percent increase in one year.

Originally short-term rentals were considered a part of the sharing economy, offering travelers a low-cost option to pricey hotels or resorts. But a growing trend has emerged with commercial operators running hoteling schemes, which tend to fracture communities, raise safety concerns

and increase the price of rent for residents while depleting affordable housing options.

Demand

Online lodging services that offer short-term rentals, like Airbnb, Vacation Rental by Owner, HomeAway, FlipKey and Evolve, are a sector of the economy that is growing. In 2018, Airbnb celebrated 10 years in business with some impressive statistics:

- More than 5 million listings worldwide.
- 81,000 cities with listings in more than 191 countries.
- 400 million guest arrivals with more than 2 million people staying at an Airbnb each night.



The success of the short-term rental business model is largely due to demand and investment opportunity. Consumer demand for short-term rentals includes a desire for perceived lower prices, the opportunity to interact with local people, the convenience of a home with a kitchen and an “at-home feeling.” Sometimes it can be the novelty of a different type of experience, be it a luxury mansion or a tree house.

In Montana, visitor data shows a 12 percent increase in the use of short-term rentals within the peak summer season between 2017 and 2018 (Figure 1). In 2018, more than 411,000 nonresident groups rented a home or cabin during their stays. And this growth is happening when overall visitation to Montana is flat.

Opportunity

Short-term rentals provide a financial benefit for homeowners – singles with high rent, retirees with empty homes or couples with spare rooms in need of cash have found that their empty spaces can bring income.

Others see short-term rentals as an investment. In Whitefish and Gardiner, the appetite for investments in real estate appears to be a main driver in the rapid increase in the

**IN THE WHITEFISH AREA,
THERE ARE MORE THAN 900
LISTINGS FOR SHORT-TERM
RENTALS ON AIRBNB IN A TOWN
WITH 7,600 RESIDENTS.**

number of short-term rentals. Vacation home owners hoping to cover the costs of owning a second home is another cause. It's become common for real estate companies in the area to tout the sale of a home or apartment as an income generator.

For investors, short-term rentals offer several reasons to invest: 1) the short-term rental market is growing; 2) income from short-term rentals can sometimes make more money for the owners than long-term leases; 3) revenue from these rentals may cover mortgage payments, allowing

for diversification in other investments; 4) owners can deduct mortgage interest and business expenses related to the rental; 5) it's easy to find renters with online platforms; and 6) owners could have a vacation home to occasionally enjoy themselves.

Impacts and Challenges

On the downside, short-term rentals create a number of issues for communities, including increased home prices, a reduction in workforce housing and affordable housing stock and changes in a neighborhood's complexion.

Clearly, the home-sharing economy has disrupted traditional markets of rentals and home sales. As landlords switch from long-term rentals (used by residents) to short-term rentals (used by nonresident visitors), this drives up the rental rate and housing prices in the long-term market.

Granted, short-term rentals are not the sole cause of the lack of affordable housing in Montana, but in some areas

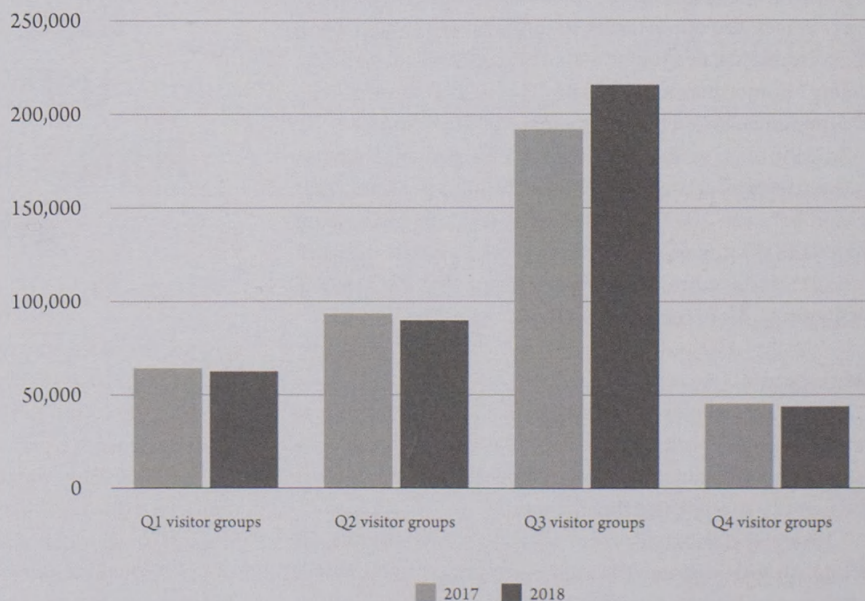
they can be a factor. In the Whitefish area, there are more than 900 listings for short-term rentals on Airbnb in a town with 7,600 residents (Figure 2).

In 2016, Whitefish conducted a workforce housing needs assessment and found that units occupied by year-round residents dropped nearly 10 percent from 2000 to 2010, with much of the shift attributed to second/vacation home buyers. In addition, more long-term rentals are now limited to a six-to nine-month lease, allowing the owner to do short-term rentals at higher rates during the summer months.

In 2017, a Whitefish Strategic Housing Plan was completed, which included a strategy to convert short-term rentals back into long-term housing. Having grappled with the issue for several years, the town now regulates short-term rentals.

Other Montana communities also have enacted ordinances to limit the growth of short-term rentals. In 2016, the Missoula City Council approved rules for homeowners, which included complying with housing safety codes, limiting the number

Figure 1. 2017 and 2018 short-term rentals by visitors to Montana. Source: Institute for Tourism and Recreation Research.



of guests allowed per square foot and notifying neighbors about their rental status. A \$52 registration fee is required for short-term rental owners, along with a \$27 yearly fee.

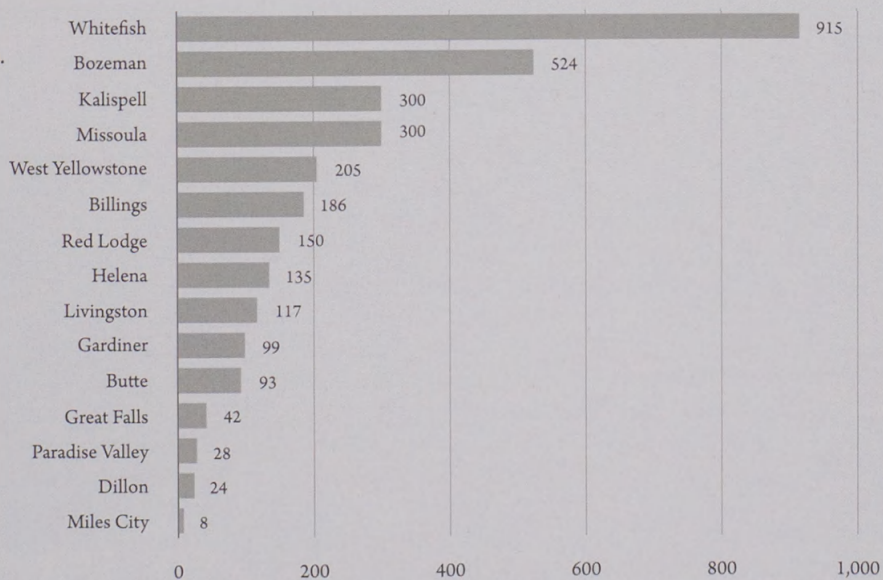
When Bozeman approved similar regulations in 2017, they were much stricter. The city requires a \$250 annual fee, a \$225 one-time fire inspection fee and up to a \$1,500 administrative conditional permit fee. All of these communities require the owner to submit the lodging facility use tax to the state, as well as a county health accommodations license.

These types of regulations are an attempt to curb the tide and negative impact short-term rentals can have on communities. One solution used by Whitefish is their use of tracking software to understand the number and location of these short-term rental units. This provides the community with information to help them manage the proliferation of short-term rentals.

Clearly, Montana is dealing with an affordable housing issue, and short-term rentals are not helping matters. But the hope is that Montana's towns and communities can stay affordable for year-round residents while offering a variety of lodging options for visitors.

Norma P. Nickerson is director of the Institute for Tourism and Recreation Research in the W.A. Franke College of Forestry and Conservation at the University of Montana. Rhonda Fitzgerald is the owner of the Garden Wall Inn in Whitefish and a member of the Whitefish Strategic Housing Plan Steering Committee. She serves on Montana's Tourism Advisory Council.

Figure 2. Airbnb listings in select Montana towns. Source: Airbnb.com.



WHAT HAPPENED TO MONTANA'S FORESTRY JOBS?

The Cause of Wood Products Employment Declines in the State

BY TODD MORGAN, MICHAEL NICCOLUCCI AND PAUL POLZIN

Montana's forest industry has seen a dramatic change in employment and wages since its peak in the late 1980s to the lows of today. Forest industry employment has dropped nearly 39 percent (4,600 jobs) and so have salaries and benefits paid to its remaining workers.

The debate surrounding this decline has centered on changing technology and an increase in productivity. For instance, we now have equipment that can chop down trees, remove the branches and load them on a truck all in one swift move, so we don't need as many loggers in the woods to harvest the same amount of timber.

In January 2018, Mark Haggerty of Headwaters Economics testified before a joint subcommittee on Montana's changing economy and tax structure. When asked to describe what's changing, Haggerty noted that innovation in the wood products industry was to blame for declines in employment and income.

But the overwhelming conclusion from decades of data is that a diminishing timber harvest, or log supply, in the state is the leading cause. Simply put, we are not harvesting

as much wood in Montana as we once did. In examining the data, the Forest Industry Research Program at the University of Montana found this to be the major reason for declining employment and labor income over the past 35 years.

Timber Harvest and Forest Industry Trends

Timber is harvested in Montana from both public and private lands, and the largest declines have been on U.S. Forest Service lands (Figure 1). In the 1990s, there was a 70 to 80 percent reduction in wood harvesting. Private harvests began to decline in the late 1990s as well, reaching a trough in 2009. Since then, timber harvests have stabilized at levels not seen since the 1940s. In all, the average Montana timber harvest since 2011 is one-third of what it was during the 1980s.

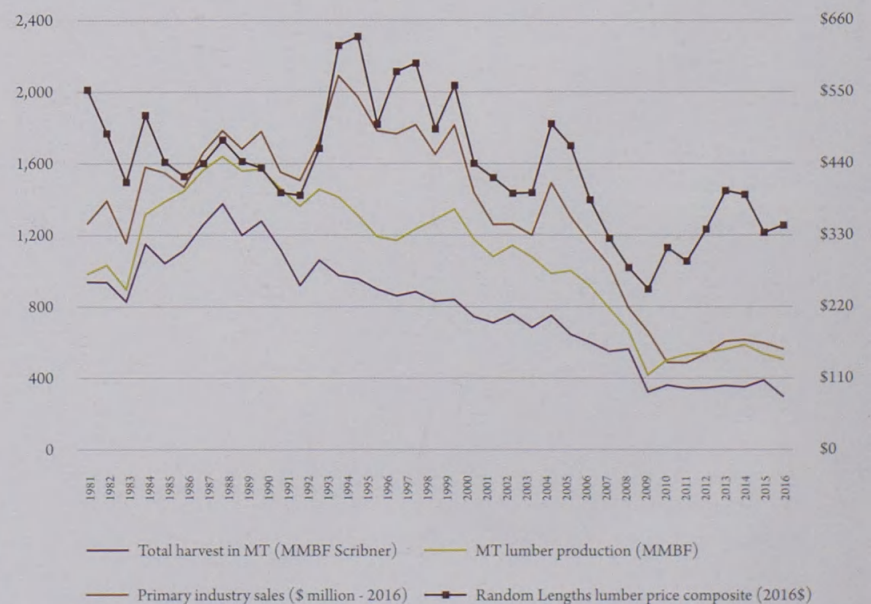


A log goes through a vertical saw at RBM Lumber in Columbia Falls, Montana.
(AP Photo/Flathead Beacon, Greg Lindstrom)

Figure 1. Montana timber harvest, 1980-2016. Source: Bureau of Business and Economic Research.



Figure 2. Montana timber harvest, lumber production, primary wood product sales and lumber price. Sources: Bureau of Business and Economic Research, WWPA and Random Lengths.





Roy Thompson shows vertical grain boards at RBM Lumber in Columbia Falls, Montana. (AP Photo/Flathead Beacon, Greg Lindstrom)

Because of this situation, Montana's lumber production has seen the same overall trend, declining substantially since the late 1980s (Figure 2).

During the 1990s and early 2000s, the U.S. experienced a period of high lumber prices and record levels of new home construction and lumber consumption, but Montana's lumber production continued to fall. Even at the peak of U.S. home building in 2005, with more than 2 million new home starts, Montana's lumber production was only slightly above its 1982 recession low. And since the Great Recession, lumber production has remained relatively flat despite increasing lumber prices. Montana's lumber production in 2016 was one-third of what it was in 1989.

Clearly there is a disconnect, and the underlying cause has been the limited availability of timber in the state.

Industry Productivity

There are several possible ways to measure productivity: material productivity, which is output per unit of raw material input (for example, lumber output per log input), and labor productivity, which is output per worker. In Montana, lumber overrun and lumber recovery – two measures of material

productivity – increased 25 percent and 6 percent, respectively, from 1981 to 2014. This means that more lumber is now being squeezed from logs going into Montana mills – thanks to modern sawmill technology.

Not surprisingly, labor productivity in sawmills has increased over time, but there have been several flat periods and some noticeable declines, particularly during the Great Recession. Corresponding data for plywood and particleboard plants show increases as well. But labor productivity for forestry and logging workers in Montana has been declining slightly since 1990 when data tracking began (Figure 3).

It may seem odd that forestry and logging labor productivity in Montana has declined when it's increased in other parts of the country. But timber harvests in the southern U.S. and Pacific Coast can be quite different. While Montana foresters and loggers may have access to the new technology and equipment that should increase productivity, other factors influence timber harvesting in the state, such as the landscape, environmental concerns, restrictions on the days forests and logging roads are open, and concerns about wildlife and wildfires are but a few.

Employment and Labor Earnings

Figure 4 presents Montana's wood products employment and (inflation-adjusted) labor earnings. It takes only a quick glance to see the downward trend over the past three and a half decades, mirroring the trends in timber harvest and lumber production. Employment and earnings decreases began in the 1990s, and there were a number of mill closures through the 2000s. During the Great Recession, there was a pronounced drop off, with only a modest recovery since.

During the most recent post-recession period, Montana's forest industry employment was only 2.7 percent higher than its low point in 2010. Labor earnings were 17 percent higher than the 2011 low. Most mills in Montana have been running only one shift for years because they're unable to obtain a sufficient number of logs to add a second shift. Thus, many Montana mills have been operating at only 50 to 70 percent capacity during periods of high nationwide lumber prices.

Statistical Analysis

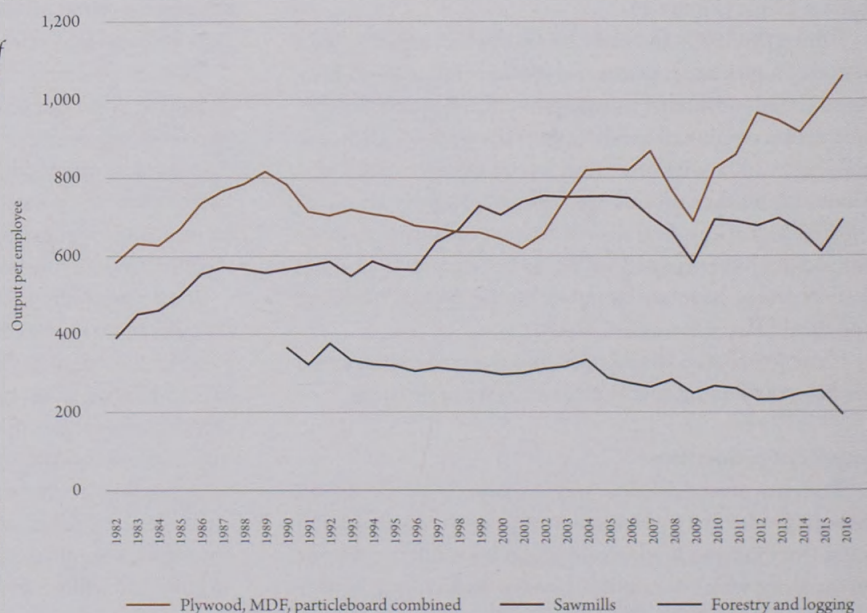
Statistical techniques were used to quantify the relationships among Montana's wood products employment, labor earnings,

timber harvests (log supply), sawmill labor productivity and national lumber prices (a measure of demand for wood products).

The most important factor influencing forest industry employment in Montana was found to be timber harvest. Statistical analysis estimated that the timber harvest was four times more important than labor productivity. National market conditions (demand) as measured by U.S. lumber prices were not significantly related to Montana's forest industry employment. The analysis found no statistical relationship between forest industry labor earnings and labor productivity or U.S. lumber prices. Only Montana's timber harvest was related to forest industry labor earnings.

These findings are important because they demonstrate that the log supply situation in Montana is the most important factor causing the reduction in forest industry employment and labor earnings. Also, given log supply and U.S. market conditions, increasing labor productivity in sawmills increases forest industry employment in the state and does not lower it. This dispels the myth that productivity gains are driving Montana forest industry employment declines.

Figure 3. Montana forest industry labor productivity. Sources: Bureau of Business and Economic Research and U.S. Bureau of Economic Analysis.



CLEARLY THE TREND IN MONTANA'S TIMBER HARVESTS, WHICH HAS BEEN DROPPING SINCE THE LATE 1980S, HAS BEEN THE MAJOR CAUSE OF DECLINING EMPLOYMENT AND LABOR EARNINGS IN MONTANA'S FOREST INDUSTRY.

Clearly the trend in Montana's timber harvests, which has been dropping since the late 1980s, has been the major cause of declining employment and labor earnings in Montana's forest industry. Taking increased milling productivity and lumber prices into account, timber supply is still the most important factor determining its size and economic contribution.

With substantial increases in timber availability, as suggested by the chief of the USDA Forest Service, as well as national forest system officials in Missoula's Region 1 office, the forest industry could grow, employ more workers and generate

more labor earnings. And perhaps more importantly, with a stable or growing forest industry, Montana could increase its ability to manage its forests and help reduce wildfire risks.

Todd Morgan is director of the Forest Industry Research Program at the University of Montana. Mike Niccolucci is a retired USDA Forest Service economist and Paul Polzin is director emeritus at the Bureau of Business and Economic Research at the University of Montana.

Figure 4. Employment and labor income in Montana's Forest Industry. Sources: Bureau of Business and Economic Research, BEA and BLS.





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ENTREPRENEURSHIP IN MONTANA

Montana Leads the Country in Business Ownership

BY BRANDON BRIDGE AND SCOTT HAWK

Montana has a strong entrepreneurial spirit. The state has more entrepreneurs per capita than any other state and a business survival rate (businesses that survive their first five years) that ranks in the top 10. Some 3,400 Montanans start a new business each month, and more than half of those startups are still open five years later. To put it simply, Montana is among the nation's leaders in entrepreneurship.

For several years, the state has ranked at or near the top of the Kauffman Index of Entrepreneurship, which is a leading indicator of new business creation. But Montana's entrepreneurial culture is waning – a trend that's consistent nationally. The share of Montanans who own a business as their main job has fallen nearly 50 percent since 1998. Similarly, the share of Montanans who work for young businesses has fallen from roughly 20 percent in the 1990s to 12 percent in recent years.

Entrepreneurs are a necessary part of the economy. As industries wax and wane, it's entrepreneurs who fill the gap – they see a downturn and some capacity that's going unuti-

lized and figure out how to use it. And because entrepreneurs tend to run small businesses, they are able to quickly adjust to inevitable changes.

But a big difference between Montana's entrepreneurs and those in other parts of the country is that startups in Montana tend to stay small and are less likely to scale up. The average size of a new firm is the lowest in the country, with an average of three employees compared to six nationwide.

A recent study on entrepreneurship by the Bureau of Business and Economic Research at the University of Montana found some positive signs of success, as well as some weaknesses in what would seem to be a robust entrepreneurial ecosystem.



Dermot O'Halloran, left, Senior VP of Corporate Development, and Thomas Acevedo, CEO of S & K Technologies, Inc., pose at the company's headquarters in Polson, Montana. (AP Photo/Flathead Beacon, Greg Lindstrom)

Indicators of Success

1. Montana has more entrepreneurs.

The share of Montana's population that owns a business is the highest in the country. In 2015, more than 10 percent of Montanans owned a business as their main job (Figure 1). Nationally, only 6 percent of Americans owned a business as their main occupation, and the rate of business ownership in Montana was more than double the rate found in 11 states.

2. Montana creates more entrepreneurs.

Consistent with its high rate of business ownership, Montanans become entrepreneurs at a higher rate. 3,400 Montanans start a business each month, ranking the state 4th in 2016 and 1st from 2013 to 2015.

3. New Montana firms survive.

The five-year survival rate for new Montana firms is good. In 2016, more than 51 percent of firms formed in 2011 were still operating. This ranks Montana ninth among all states and in the top 10 for survival rates in six of the past 10 years. However, only 42 percent of Montana firms

**SOME 3,400 MONTANANS
START A NEW BUSINESS EACH
MONTH, AND MORE THAN HALF
OF THOSE STARTUPS ARE STILL
OPEN FIVE YEARS LATER.**

formed in 2009 survived their first five years. This ranked Montana in the bottom 12 states.

Indicators of Weakness

1. New Montana businesses tend to be small.

The average new employer business, a firm less than a year old, has 3.9 employees. This is the smallest new firm size among all states (Figure 2). New employers in Montana have consistently been among the smallest in the country

Figure 1. Share of working age population who own a business as their main job. Source: 2017 Kauffman Index of Main Street Entrepreneurship.

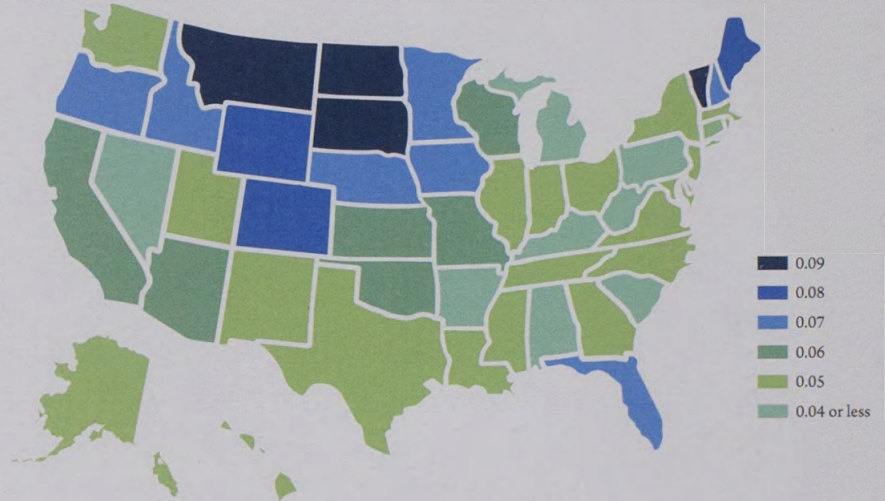
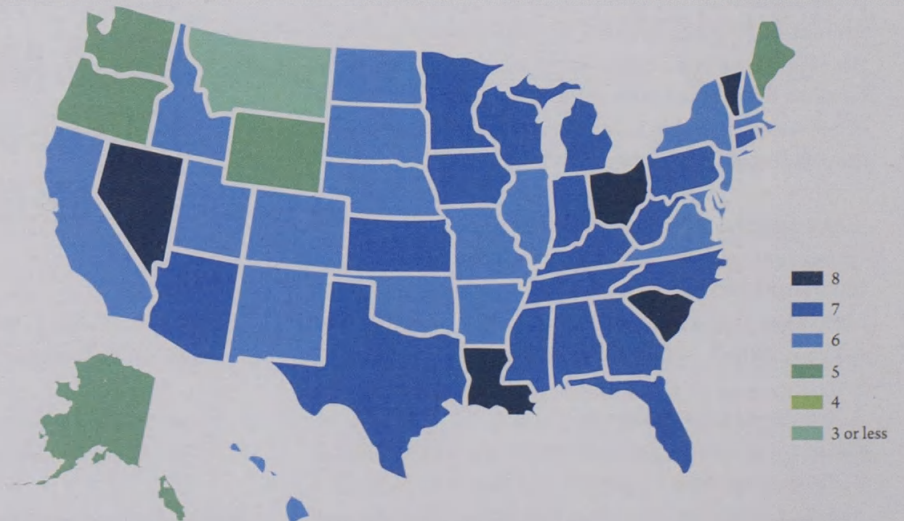


Figure 2. Average number of employees at new firms. Source: 2017 Kauffman Index of Growth Entrepreneurship.



for the past 25 years, ranking among the fifth smallest each year since 1992. Plus, five years after opening the average business employed 6.6 people – the smallest average among all states.

2. New Montana businesses are less likely to scale-up quickly.
Since 2014, less than 1 percent of new Montana firms that started with fewer than 50 employees grew to have more during their first 10 years. The percent of firms that scale-up was the lowest in the country, and Montana has consistently ranked in the bottom five states for nearly 20 years.

3. Montana business owners have lower aspirations.
Only 54 percent of employer businesses in Montana say they aspire to grow their businesses profits or sales. This is the second lowest percentage among all states. Nationally, 64 percent of firms want to grow.

4. Montana has a lower density of high-growth firms.
The number of private Montana firms with at least \$2 million in revenue, which have also grown by at least 20 percent a year for three straight years, is relatively low. Montana is ranked 43rd among all states.

5. Montana has a relatively small traded sector.
While Montana has a relatively large share of employer firms that sell primarily to customers outside their region, Montana ranks last in the share of employment in firms that sell primarily to non-local customers. Only 11.5 percent of Montana employment is in firms where local sales represent less than 25 percent of the total.

6. Montana has a disproportionate share of seasonal and part-time businesses.
Twenty-three percent of Montana firms operate less than 40 hours per week or less than 12 months per year, operate occasionally or are seasonal. This is 4 percent higher than the national level.

7. Montana firms are less likely to have a patent, trademark or copyright.
Only 1.3 percent of Montana firms have a patent (rank 47th), 4 percent have a copyright (rank 41st) and 6.6 percent have a trademark (rank 41st). In total, only 8.6 of

Montana firms have any of these, which ranks Montana 47th among all states.

Overall, the state of entrepreneurship in Montana is a mixed bag. It continues to generate more entrepreneurs than other states and these entrepreneurs tend to create businesses that are more likely to survive. However, the firms tend to be small, have lower aspirations and are less likely to grow.

Recent growth in access to venture capital and business support services suggests that Montana may be on the verge of developing more high growth start-ups. But getting Montana's entrepreneurs to succeed in creating high-growth firms with high wage jobs, will not be easy.

Brandon Bridge is an economist and director of forecasting at the Bureau of Business and Economic Research at the University of Montana. Scott Hawk is editor of the Montana Business Quarterly and publications director at the Bureau of Business and Economic Research.

MINING, TAXES AND JOBS IN MONTANA

The Economic Contribution of Hard Rock Mining

BY PATRICK M. BARKEY

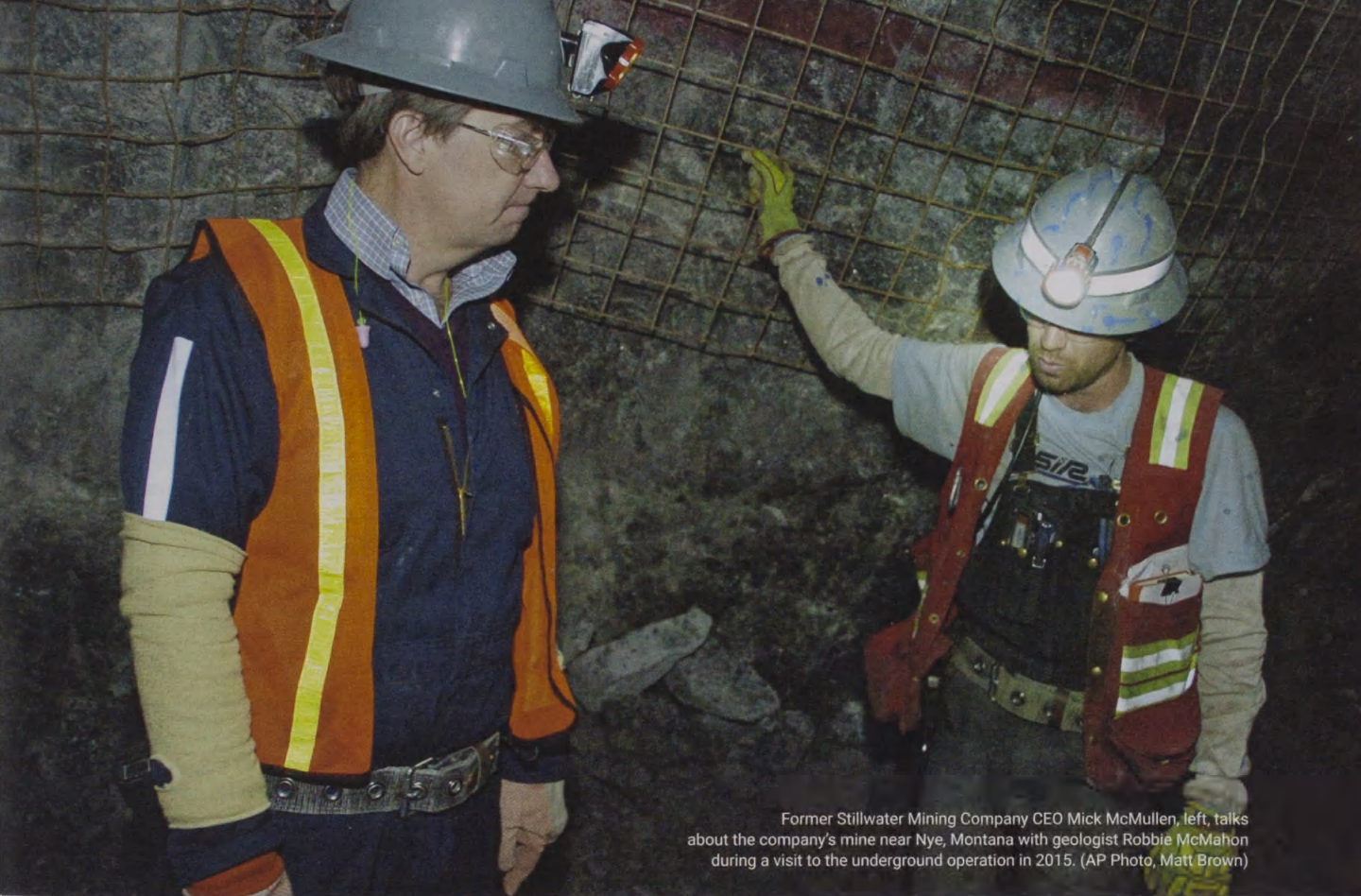
What would the economy of the state of Montana look like if the eight largest hard rock mines – producing copper, palladium, gold, talc, cement and other products and materials – did not exist? That was a question posed in a recent study produced by the Bureau of Business and Economic Research. It addressed – both for existing and for proposed new metal mines – the contributions made by hard rock mining to jobs, income, spending, tax receipts and population in the state.

The conclusion underscored the continuing importance of hard rock mining activities, not only to the economic livelihoods of the communities that are home to the mining operations, but also to the health of the state economy as a whole.

Last year, Montana's general fund revenues were extraordinarily weak. General fund collections – encompassing the entire suite of state taxes and fees not earmarked for specific use – managed to grow by just \$20 million in 2017. On a base of \$2.1 billion, that was roughly a tenth of a percentage point growth. The question was why these revenues were not coming in as they should have been?

Now with a complete accounting of the patterns of growth in Montana's economy, we see that a contraction in mining earnings of \$225 million ultimately produced the worst revenue performance the state had seen since the end of the Great Recession (Figure 1). In truth, Montana's hard times in mining in 2016 pertained more to oil and gas activities in the wake of the oil price bust – these were included in the mining total. But the essential message, that events in high earnings natural resource industries have a disproportionate impact on the economy as a whole, was demonstrated dramatically.

The mining industry and the state economy enjoyed a much better year in 2017. But an understanding of how the



Former Stillwater Mining Company CEO Mick McMullen, left, talks about the company's mine near Nye, Montana with geologist Robbie McMahon during a visit to the underground operation in 2015. (AP Photo, Matt Brown)

mining industry – and in the case of this analysis, the hard rock mining industry – can exert such influence on economic outcomes clearly is important.

Research Approach

There are at least three ways to approach the assessment of hard rock mining's importance to the economy. Certainly, the products produced by Montana's metal and talc mines – the palladium that goes into catalytic converters, the gold that is part of high-tech devices and the copper that goes into almost every electronic device – are of high value in a modern economy. Montana's hard rock mines are also an important employer and customer for Montana vendors in the communities in which they operate. Lastly, there is the outsized contribution of hard rock mining to state and local taxation, thanks to Montana's reliance on natural resource industries as part of its revenue base.

Using comprehensive information gathered from the state's eight largest mining facilities on the breadth and scale of their operations, as well as the activities of the dozens of exploration projects currently underway throughout the state, we constructed a picture of what economic activity

across the state would look like if those operations did not exist. Such a picture removes not just the mining activities themselves, but the transportation, energy, engineering and other activities that are closely linked to mining production, as well as the spending and activity in the economy as a whole that are induced by the mining companies and their employees.

In order to capture all of the interactions between hard rock mining and the rest of the economy, the study utilized a well-respected economic model (REMI), which was specifically calibrated for application to the Montana economy. The model provided the means to track and tally how the spending at Montana's hard rock mines – by both workers who are employed there, as well as the mines themselves – supports other economic activity around the state.

The research compared two states of the Montana economy. The first is the directly observable activity of the economy as it exists today, which includes all of the impacts of Montana's hard rock mining operations. The second economy is artificial – a “no mining” economy where the spending, production and jobs at Montana hard rock mines, including the ongoing exploration activities, are removed from the economy. The

model was used to create this scenario, where the state economy comes to rest at a new, lower level of activity as the absence of mining is felt across all industries and activities. The difference between these two scenarios is the economic contribution of hard rock mining.

Montana's Hard Rock Mines

The study considered the economic activity at eight specific hard rock mining facilities located around the state (Figure 2). Those facilities mine and process a variety of metals and other products, including copper, cement, talc, platinum, palladium, molybdenum and gold. Jointly these facilities directly employ more than 3,100 workers with annual wages in excess of \$300 million. Additionally, the ongoing exploration activities that are underway across the state account for an addition \$37 million each year in economic activity. In addition to these considerable wages, the hard rock mines also make considerable purchases of equipment and services from vendors and suppliers.

Natural resource industries, especially hard rock metal mines, have special importance for state and local tax revenues. Not including the taxes levied on workers, which are the

same as other employers, the hard rock facilities analyzed in the study pay:

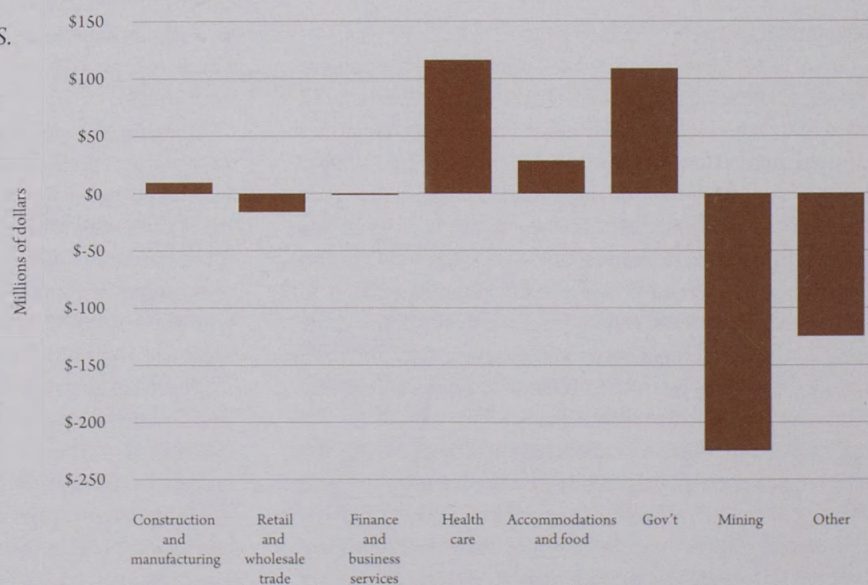
1. Metal Mines Tax
2. Resource Indemnity and Groundwater Taxes
3. Cement and Gypsum Taxes
4. State Lands Fees
5. State Lands Royalties
6. Property Tax – Net Proceeds
7. Property Tax – Gross Proceeds
8. Property Tax – Other
9. Corporation Income Tax

With the major exception of property taxes, these taxes are remitted to state government. In fiscal year 2018, tax revenues from the taxes listed above (omitting the Corporation Income Tax) totaled \$44.8 million.

Research Results

The analysis is quite detailed, but the answers to the basic research questions are simple. The Montana hard rock mining industry is an important source of prosperity and value to

Figure 1. Real earnings growth by industry, Montana, 2016. Source: U.S. Bureau of Economic Analysis.



Montana households, businesses and governments – not just in the mining communities, but throughout the state. The state's eight largest hard rock mining, talc mining and cement materials facilities together, with the ongoing exploration activities, ultimately produce a state economy that:

- has 12,304 more permanent, year-round jobs with average annual earnings of \$86,030 per job;
- produces an additional \$2.7 billion each year in economic output;
- sees Montana households receive \$1.1 billion more per year in income, including \$1 billion in after-tax income available for spending in their local communities;
- helps state government realize almost \$200 million in additional tax and nontax revenue per year; and
- supports a population that is larger by 20,293 people, including 4,933 more school-aged children.

These economic contributions are well in excess of the employment, production and tax receipts produced by the industry directly, and reflect: 1) the extensive linkages that exist between Montana's mines and the rest of the economy; 2) the high value-added nature of hard rock mining and the resultant high levels of capital expenditure and worker

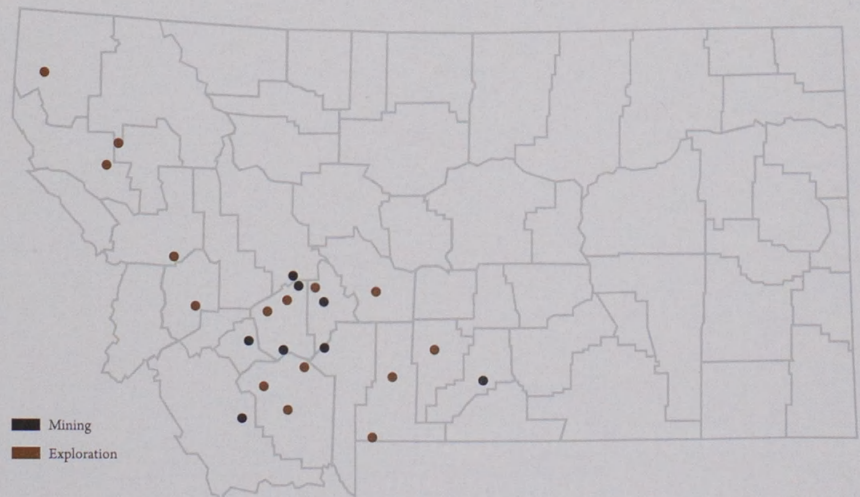
wages; and 3) the outsized contributions of natural resource industries in general, and the hard rock mining industry in particular, to Montana state government's revenue mix.

The hard rock mining industry in Montana is an important source of jobs, income, sales revenue and tax revenue for Montana workers, households, businesses and governments. The eight largest producers of metals, talc, and concrete products today ultimately support more than 12,000 jobs statewide, with average annual earnings of more than \$86,030. Many of those jobs are in smaller towns and rural communities with few, if any, opportunities in other industries for those workers and their families

Montana's raw materials have tremendous value in the global marketplace. The process of finding, extracting and processing those materials, and ultimately turning them into the wide spectrum of products that improve our lives, is a chain of events that begins here and ends up all around the world.

Patrick M. Barkey is director of the Bureau of Business and Economic Research at the University of Montana.

Figure 2. Montana mining and exploration activities. Source: Bureau of Business and Economic Research.



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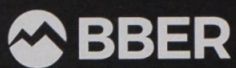
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